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ABSTRACT

In an effort to describe the linguistic relational categories used by elementary school children, 75 children in grades one through six were asked to complete a puzzle by placing each of three identical triangles on a drawing of a fish, one on the dorsal, one on the ventral, and one on the tail. A piece of Velcro was attached to the back of two triangles. The third piece contained no Velcro backing and hence would not adhere to the puzzle. The chidren were requested to ask their teacher for an additional piece of the material, but were not told the name of the material. It was hypothesized that as age increased, so would the number of descriptive categories used. Their verbal requests to the teacher were categorized according to 24 possible relational categories. An analysis of grade level and sex revealed no developmental trends as to the number or type of categories used. An analysis of their responses to the experimenter in the puzzle situation was also made. While about half of the children attempted to find out the name of the material, no trends in age level or sex were detected. It was concluded that the task placed linguistic demands upon the children that were greater than they could cope with considering their limited experience with Velcro and that coping mechanisms were no more sophisticated at one level than another. (The appendix contains illustrations of repsonses in each class.) (Author/HOD)

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Children's Attempts to Verbally Label an Unfamiliar Object: An Exploratory Study

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Abstract

Seventy-five children in grades one through six were asked to complete a puzzle by placing each of three identical triangles on a drawing of a fish, one on the dorsal, one on the ventral, and one on the tail. A piece of Velcro was attached to the back of two triangles. The third piece contained no Velcro backing and hence would not adhere to the puzzle. The children were requested to ask their teacher for an additional piece of the material, but were not told the name of the material. Their verbal requests to the teacher were categorized according to 24 possible relational categories. Analysis of grade level and sex revealed no developmental trends as to the number or type of categories used. An analysis of their responses to the experimenter in the puzzle situation was also made. While about half of the children attempted to find out the name of the material, no trends in age level or sex were detected. It is suggested that the task presented placed linguistic demands upon the children which were greater than they could cope with considering their limited experience with Velcro and that coping mechanisms were no more sophisticated at one level than another.

CHILDREN'S ATTEMPTS TO VERBALLY LABEL AN UNFAMILIAR OBJECT: AN EXPLORATORY STUDY

Introduction

It has been suggested by Brown (1973) and Riegel (1970) that the meaning of a word is tied to the type and number of semantic relationships an individual associates with the word. For example, a young child learns the word chair by forming a relationship between the specific characteristics of the high-chair in which he or she is placed and the spoken word chair. Shown the same chair with a few characteristics altered such as painted a different color, in an upside-down position, or missing a back, the child may no longer respond to the object as a chair. But as the child gains more experiences with many types of chairs and linguistic abilities develop, the concept "chair" is associated with many other features: something to sit on, supported by legs, constructed of wood, metal, or plastic, found in homes, and so on. The child also learns to make fine discriminations among many different types of chairs. It is through the development of these semantic relationships that words acquire the rich and varied meaning they have in adult vocabulary.

At other times, children are confronted with objects or events for which they have no single verbal referent. In referring to these objects of events, they draw upon a number of semantic features which are related to the object or event. These features may include descriptions of function, quality, similarity to other events or objects, shape, color, taste, etc. Thus, if a child needs a paperclip but has not learned its name, the request might be for the little piece of wire thing that holds papers together. By describing the object's qualities and function, that is, the types of things the paperclip is related to, the child may be able to communicate more effectively than simply asking for a thing-a-ma-jig, or what-do-you-call-it, or didi-li-bob.

Clark (1973, 1974) suggested that the meaning of individual lexical units change as the child's linguistic abilities develop. The speech of the very young child has been described as egocentric. Salient relational categories which could be used to describe an object are frequently omitted. But as the child matures and accumulates more experiences, additional semantic qualities are added to the language system. Therefore, it would be logical to assume that the child's range and choice of salient features of lexical units or concepts also change and become more complex as a function of age and experience.

During the period from the use of egocentric speech to the time when the linguistic system is more fully developed, it has been suggested that children progress through a series of stages (Inhelder and Piaget, 1958). These stages may be marked by the use of an evolving pattern of certain types of relational categories. If such stages exist and could be identified, it might be possible to enhance language development by deliberately teaching children to use certain relational categories which would assist them in identifying salient features of objects or events. Krauss and Glucksberg (1977) provide convincing evidence to indicate that adults are able to communicate much more effectively than are children in situations which require them to communicate their knowledge of relational categories. They also found that as children mature, choosing salient relational categories to transmit information increases.

Tracing the development of a child's relational linguistic system has been a subject of concern to linguists (Riegel, 1970). Several techniques have been devised to analyze children's use of a relational category system. One simple procedure is to ask children of different ages to identify salient features of various objects. Nolin (1976) used this procedure to investigate the linguistic categorical system of young children. He asked children to define

ten common nouns by asking them the questions, "What is a ____?" (tree, shoe, bird, bed, hand, man, horse, table, door, and book). Twelve children of four different age levels (three, four, five, and six) served as subjects. Nolin classified each of the subject's responses using an adaptation of Riegel's (1970) intralingual relational category system. He found, as was suggested by Clark (1973) and Quarterman and Riegel (1968), that the number of definitions given for each word increased as a function of age. In fact, six year olds who represented one fourth of the population furnished 40% of the total responses. It was also found that certain infralingual relations increased with age while some others did not. Nolin was unable to identify any over-all developmental trend in the use of specific relational categories.

One of the problems with Nolin's study was that the children were familar with the words they were asked to define. There was no need to identify salient relationships. The task was more like a free association test than a test of one's need to communicate. Schlesinger (1974) points out that when children are asked questions, certain rational concepts may remain unexpressed because they may feel they are not important to communicate. Also, there is no reason to expect that the children in Nolin's study would express the features most salient about each of the nouns selected. A somewhat different finding may have resulted had Nolin used a more realistic communication need situation.

Such a situation might better be created by showing children an object for which they have no specific verbal referent. If they are asked to obtain the object by requesting it from another individual, it would be possible to determine the relational categories they used to describe the object by analyzing their responses. By sampling various age groups, it would be possible to determine if the use of certain relational categories increased or decreased as a function of age. It might also be possible to determine whether or not changes in the use of relational categories varied as a function of gender.

Thus, the purpose of this study was to describe the linguistic relational categories used by seventy-five male and female elementary school children enrolled in grades one through five. The communication situation chosen was one in which the children were requested to ask their teachers for an object (Velcro) which the children were unable to identify with the specific verbal label. Based upon the results of previous investigations and theoretical models about the development of linguistic categories, it was hypothesized that as age increased, so would the number of descriptive linguistic categories used. It was also anticipated that older children might use different types of relational categories than young children. Finally, it was suspected that female subjects would use more linguistic categories than males since females are reported to be more advanced in language skills than males (Anderson and Newby).

Method

Selection of Subjects: Seventy-five children from a parochial school in Tempe, Arizona, served as subjects for this study. Children from five grade levels, one through five, were chosen by selecting every other male and female student from the class roll sheet of each grade until a total of 15 subjects were selected from each grade. All subjects were enrolled in regular classes and all were performing school work satisfactorily.

Procedures: Children were seen individually in the corridor just outside each classroom. The experimenter displayed an 8 x 2 inch sketch of a fish mounted on a 13 x 5 inch poster board so that the front surface of the fish was at a 45 degree angle with the surface of the table. The dorsal, ventral, and tail fins

(Insert Figure 1 Here)

were omitted from the sketch. In their place was attached a 1 inch square of yellow Velcro[1]. Three 1 1/2 inch equilateral triangles cut from poster board were placed before the child. Attached to the back of two of the triangles was

a 1 inch square piece of black Velcro. The third triangle contained no Velcro backing. The following instructions were read to the child:

> Here's a picture of a fish. Some of the parts are missing. I want you to put these pieces on so they make the fish look right. Here, put this one on.

The child was then given a triangle containing the Velcro backing. The other two triangles were placed in front of the child. Once the first piece was positioned, the child selected a second triangle also containing the Velcro backing, placed it on the fish, and proceeded to position the third triangle. Since the surface of the fish sketch was placed at a 45 degree angle with the table surface, the third triangle fell from the fish to the table. The experimenter said:

"Oh-oh, it fell off. Go ask your teacher for some more so I can fix it." If the child asked a question such as, "What is it called?" the experimenter simply repeated the above request.

The child returned to the classroom and went directly to the teacher who was seated at the desk. Two observers seated near the teacher's desk tape recorded the child's request and observed the child's behavior. Following one or more queries of the teacher, the child was told to be seated for now. In some cases the teacher said she would look for the item requested; in other cases, she said she did not have the item. Written scripts were made of the audio tapes by three independent listeners. Agreement among the listeners was 98% when words spoken on the tape were matched with those printed on the scripts.

Classification system: An adaptation of Riegel's (1970) linguistic relational category system was used to classify utterances produced by children in the teacher communication situation. Riegel, drawing upon the work of Inhelder and

Piaget (1958), suggested many potential relationships could exist when an object or event is described. These relationships can be divided into two general classes: logical and infralogical relations. Logical relations are those which are based upon abstractions and are derived through experience with language. They consist of words rather than events, objects, or qualities. Names of objects or classes of objects would be illustrative of logical relations. Riegel identified five categories of logical relations: Superordinates, subordinates, synonyms, and antonyms. Infralogical relations are those based upon denoted objects, events, or qualities rather than abstractions. They are derived by abstracting the physical qualities or features and include categories which make reference to parts, wholes, location, function, qualities, and preceding, succeeding, and contemporaneous events.

Riegel's classification system was modified to fit the unique features of the experimental condition devised for this study. Since none of the children made statements which could be classified as antonym, coordinate, or whole, these categories were omitted. A new category, quantity, was added since many children made reference to this feature.

Each of the six infralogical categories was further divided into subcategories as follows: the categories of function, auxiliary part, and location were each divided into general, subordinate, and specific subcategories. The category of quality was divided into six subcategories, namely, color which could be black or yellow, size, texture, adhesiveness, and shape. The quantity category was divided into single, plural, and non-specific subcategories. Illustrations of each subcategory are presented in Appendix 1.

Results

Analysis of the child-teacher communication situation

The verbal utterances of each of the 75 children in the teacher-communication situation were classified according to nine general categories comprising two divisions: three logical and six infralogical relational categories. The six infralogical categories were divided into subcategories to allow detailed analysis of utterances. A verbal utterance could therefore be placed in any one of 24 categories. Since there were five grades and two sexes for each grade, there was a total of 240 cells. The 75 children produced a total of 325 classifiable utterances. This classification, shown in Table 1, contains the number of utterances produced by all children in

(Insert Table 1 Here)

each classification by grade and by sex. Only the first statements made by the children to the teachers were analyzed. Responses resulting from questions asked by the teachers were not included in the analysis because teachers did not follow a consistent questioning procedure.

Gender

With regard to differences in the number of instances in each category classified according to gender, most entries are too small to enable drawing any valid conclusions. In only three categories does gender seem to make a difference in the number of utterances. More statements by females in the fourth grade were made in references to auxiliary parts than were made by males but this situation was reversed in the case of 3rd grade children where more males in the quality category, but again, this situation was reversed at the fourth grade level where males outnumbered females. Likewise, a few more males in first grade made reference to other events category but this was not true of males in the third grade, where utterances by females outnumbered those of

males. For the most part, cell entries for males and females differed very little in each category at each grade level. In looking at the total amount of utterances in all categories produced by males and females in each grade, again there appears to be very little difference. Males in the third grade provided a few more utterances (4) than females but this tendency was reversed in the first grade. The numbers of utterances produced by females and males were almost the same in the remaining grades. When the total amount of utterances for males and for females were examined, it was found 37 males produced 160 classifiable utterances whereas 38 females produced 165 classifiable utterances. Since the number of utterances produced by each sex was the same, the sex of the subject did not appear to be a relevant variable in terms of the number of utterances produced.

Grade Level

In order to analyze trends in the number of utterances as a function of grade levels, percentage of utterances in each of the nine categories were computed.

(Table 2 Here)

Analysis of these data shown in Table 2 reveals very few differences among the percent of utterances of the grade levels, according to each category with the exception of the fifth grade. It was surprising to find that the fifth graders produced so few utterances. This may be explained by the fact that the fifth grade teacher was judged by the two trained observers to be somewhat stern and non-accepting. It is possible her behavior may have actually repressed the childrens' length of utterances.

Only a few trends could be observed regarding these use level variable. For example, in the functional relations category the percentage of utterances increased at the third and fourth grade level over the first second grade

levels but this increase was not maintained at the fifth grade level. Responses of fifth graders were very close to the number produced by children in grades one and two. There seemed to be no tendency for changes to occur in categories of auxiliary part of quality with the exception of the fifth grade in which very few utterances were produced. Utterances in the location category were approximately the same for each grade with the exception of a decreased percentage in utterances of second grade children. In the other events category, few differences are noted with the exception of a slightly higher number of utterances was produced by the fifth grade children, the smallest number was produced by third graders. Again there was no progressive trend in increments. The same appears to be true of percentages in the superordinate and subordinate categories. Only one subject's utterance was classified in the synonym category. In summary, there appear to be no clear trends indicating increment of development in the percent of utterance per category as a function of grade level, with the possible exception of the function category.

Categories

In Table 3 it can be seen that 76% of the total number of utterances produced fell into the infralogical category. Reference to other events and quality categories represented more than half of the 76%. The remaining utterances in the infralogical category were divided somewhat equally among quality, function, auxiliary part, and location in order of decreasing percentages.

(Table 3 Here)

The logical relations category constituted 24% of the total utterances produced. Of this 24%, three fourths (3/4) of the utterances were classified in the superordinate category, about 1/4 were classified in the subordinate category. Only one utterance fell into the synonym category.

Table 4 shows the percent of the total amount of utterances in each subcategory of the infralogical relations category. Clearly, some subcategories are referred to much more than others. Superordinate references are made most frequently in the function category followed by the subordinate subcategory. Only one individual made a specific reference to the piece needed to finish the puzzle. About half the utterances in the auxiliary part category fell into the superordinate subcategory; the other half were in the subordinate category. Only one individual made a specific reference to part of the Velcro referring to it as having "hooks."

(Table 4 Here)

Color was referred to most often in the quality category and accounted for almost half of the utterances in this subcategory. Black was preferred three times more often than yellow, black being the color of the Velcro which was missing from the tin.

Inspection of Table 1, reveals that five children in the first three grades identified yellow as the requested color. Yellow was not mentioned by any of the children in grades four and five. This might indicate older children are better observers of color features than are younger children.

About one fifth of the utterances made reference to size indicating the object was little. Almost the same number of utterances referred to some adhesive quality of the object noting that it was sticky. It is surprising that so few utterances, only 2% of the total amount of utterances, referred to this adhesive quality, since the chief function of the desired object was adhesion. Only 12% of the utterances referred to the texture of the Velcro. Two children referred to the triangular shape of the fix. Almost half of the utterances referred to the location of the object were of a specific nature and identified the fix of the fish as the location. The superordinate subcategory,

location, was the next most frequent followed by about one-fifth of the utterances falling into the subordinate subcategory.

In reference to the other events category, most than three-fourths of the utterances referred to a contemporaneous event. Most of the remaining utterances referred to a preceeding event. Only two children mentioned a succeeding event.

Half the utterances in the quantity category were non-specific, while one third referred to the object in the plural form even though only one object was needed. Only seventeen percent of the utterances referred to the object in the singular.

Analysis of responses during the puzzle presentation situation.

Table 5 shows the number of children who responded in each of four categories during the time they were shown the puzzle. The categories consisted of the following: (1) question type statements made by children in an attempt to verify the name they chose to label the object. These included statements such as, "A triangle?", "Some scotch tape?", "Some block?', "Some of this paper?" (2) Inquiries requesting the name of the object such as, "What's it called?" "What's the name of it?" (3) requests to take the object to the teacher, and (4) no verbal response.

Inspection of the total number of children falling into each category reveals slightly over half of the children fall into the fourth category, that is, they made no verbal response to the experimenter. Most of the remaining children asked the name of the object (24%). While eight (10%) of the children asked for a verification of their attempt to identify the object, only two children asked to take the object with them so they could show their teacher, category three. Since none of the children was able to identify the object using a verbal label, it is surprising that more children did not ask to take the object with them to show their teacher.

When the data are analyzed with regard to sex, it appears males asked for

(Table 5 Here)

verfication of their label of the object three times as often as females. Although only two children asked to take the object with them, both were males. An almost equal number of males and females asked the name of the object.

No trend is apparent with regard to the number of children requesting the name of the object verification or the material in each grade. One would expect that older children might ask more questions and seek verification more frequently than younger children but first grade children engaged in these activities almost as frequently as children in grades three, four, and five.

Discussion

It was hypothesized that when children of different ages were asked to request an object for which they have no verbal referent, there would be a tendency for older children to use more relational categories in their request, and make more frequent references to certain categories than would younger children. In analyzing the requests of 75 children in grades one through five selected for this study, no such trends could be detected. In fact, the oldest children produced the least number of utterances in almost all categories but this may have occurred because the teacher was judged by the observers to be a stern, unaccepting listener. It may be that one important variable in determining the number and type of relational categories children use is tied to certain characteristics of the listener.

It was also hypothesized that the gender of the child may play an important role in determining the type and frequency of relational categories used, but this was not found to be true. Except for a few isolated cases, the sex of subject seemed not to be related to the type of number of relational categories used.

The categories used by almost all children referred to other events, quality, and logical relations. The most frequent phrase used was, "He needs some more of that stuff." This basic phrase was elaborated by some children to include various qualities of the "stuff" its parts, its function, and its location. The use and type of these elaborations referred to as relational categories in this study seem to follow no developmental pattern with respect to age or sex. It seems doubtful that these elaborations would occur on a random basis. Some variables other than age or sex may be critical determinants. One determinant may be intelligence; another could be skill in the use of certain language abilities. Still another determinant could be related to certain personality characteristics of the child. The type of listener may also play an important role in child's selection of certain relational categories.

Although no attempt was made to evaluate the effectiveness of the children's responses, it is tempting to speculate what children should say in such a situation. During their first encounter with the puzzle situation, they could have asked to take a piece of the Velcro to the teacher as an example, yet only two children did so. They could have asked the name of the object and yet less than a third did so. They could have made reference to the most important quality of the object, adhesiveness, but only eight children mentioned this feature. Finally, they could have made reference to a similar object, but only one child mentioned the object was like the material on his dart game that made the dart stick. Of course, many of the children may not have had experience with similar objects or with the substance Velcro.

Why did the children appear to be so inept in their use of relevant relational categories? Krauss and Glucksberg (1977) offer a plausable theory in an attempt to explain why children they studied performed so poorly on a

task involving a description of geometric designs. They theorized that when a task is overly demanding of children's cognitive skills, that is, when the task overloads their information processing capacity, they do not have the opportunity to bring into play the social communication skills they possess. Krauss and Glucksberg point out that the adult American tourist may occasionally experience a similar situation when attempting to communicate to someone in a foreign country. When receiving no answer to a question, "Where is the men's room?" the tourist may continue ineffectively at somewhat louder volume, "Men's room! Toilet? John? Where?"

The striking feature resulting from this study is that first grade children used about the same proportion of relational categories as did children in other grades. If Krauss and Glucksberg are correct in their assumption that children find themselves overwhelmed by the demands of a particular situation in which they must communicate, then it would seem we have created such a situation in this experiment using Velcro. This does not mean to imply that all the children in this study were overwhelmed by the situation; some responded with appropriate responses. Nor does the fact that so many children neglected to choose more salient features to communicate about the situation mean that they were incapable of doing so. There may be a variety of reasons why some children responded with statements like, "The man needs some more black stuff." Some may have assumed the teacher knew about the material the experimenter was using; other may have been shy and still others may not have felt much responsibility for obtaining the material. It is also highly probable that most of the children have never seen Velcro before since it is an object not commonly used by children, but becoming increasingly common as a fastener for clothes and shoes. Most adhesive materials children are accustomed to are glues, pastes, and adhesive tape which are more or less

permanent and can be used only once. Had the experimenter used a more familiar form of adhesive material such as cellophane tape, the relational categories children used in their request may have been quite different.

In conclusion, the results of this study indicate that when children of different age groups are requested to ask for an object for which they have no verbal referent, there appear to be no developmental trends in using certain types of relational categories. There also appear to be few differences between the types of responses given by males or females.

The study also raises some interesting questions about the conventional wisdom of children's language development. It is commonly believed that the older the child the more linguistically skilled in all situations. Researchers should take a further and more critical look at the belief, in view of the fact that neither gender nor grade had significant impact on the complexity of children's responses. However, the theoretical and long suspected differences in linguistic complexity might become more apparent in adolescents. This should be studied.

Finally the relationships among intelligence and linguistic complexity deserve further study. The ability to forsee what is ahead is typically related to I.Q. If this is the case, should higher scoring students be more likely to ask the experimenter, "What is it I am supposed to ask for?"

These and other questions are important to our understanding of langugae development. One way to explore this critical subject is through further exploration of verbal attempts to label unfamiliar objects.

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Appendix 1

Illustrations of responses in each class

A. Infra-logical relations.

1. Functional- What its function is, what it does.

a. Superordinate

goes on, sticks to it, to make things stick

b. Subordinate

to finish the puzzle, to hold the fish

c. Specific

to fix the fish,

2. Auxiliary part - some part of the object

a. Superordinate

Some of those little things, some stuff

b. Subordinate

Sticky stuff, one of the stuff

c. Specific

Grippers, hooks

3. Quality - Description of the object

a. Color

Black

Yellow

b. Size

Little

c. Texture

Rough, fuzzy, felt-like

d. Adhesiveness

Sticky, stickery

e. Shape

Triangle, pointed

4. Location - where it goes or belongs

a. Superordinate

On the thing, on it

b. Subordinate

On the puzzle, on the back on the bottom

c. Specific

On the fix, on the fish

5. Other event - reference to some other event
   - P. Proceeding
     Because it came off
   - S. Succeeding
     Will you get, can you find
   - C. Contemporaneous
6. Quantity - reference to an amount
   - S. Singular
     One, a piece, the thing
   - P. Plural
     Those things
   - N. Non-specific
     Some more, more

B. Logical - words based upon abstract concepts
   1. Superordinate - general class
      Stuff, things, whatever
   2. Subordinate - members of a class
      Nylon, scotch tape, cardboard, cloth
   - e. Synonym - like something else
     Like a rug, like my dart game

FIGURE 1

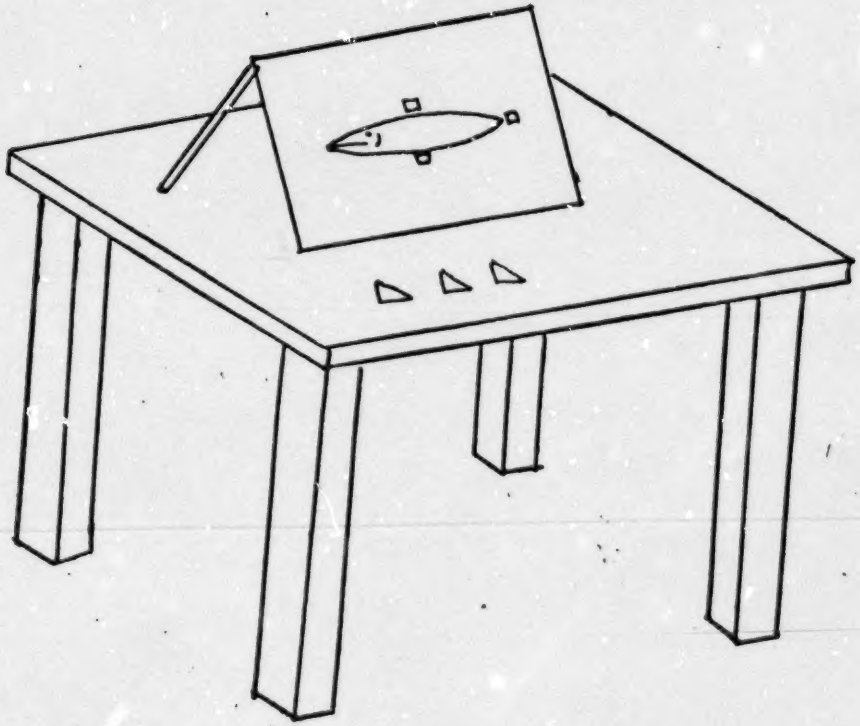

TABLE 1

Grade	Sex	n	FUNCTION			AUXILIARY PART			QUALITY						LOCATION			OTHER EVENT			QUANTITY			SUPERORDINATE	SUBORDINATE	SYNONYM	TOTAL
			A	B	C	A	B	C	A BL	Y	B	C	D	E	A	B	C	P	S	C	S	P	N				
1	M	7	2				3			1	1				1		1	2		5	2	1	2	4	3		28
	F	8	1	1			2	1	2	1	2		2		1		3	1		3	1	2	4	7	3		37
2	M	8	1	1			2		2	1		1	1				1			6	1	1	5	8	1		32
	F	7	1			1			1	1	3		1				1	1		6	2		5	5	2		31
3	M	8	4	1		3	1		2		1			1	2	2		1		4	1	2	2	5	3	1	36
	F	7	3			1			1	1					2			3		6	1	2	3	6			32
4	M	7	2	2		1			3		2	3	1	1	1		1	1		5	1	5	1	7	1		38
	F	8	3	4		4	2		2							2	3	1		5	2	4	1	8			41
5	M	7			1	1						1			1	1	1	1		6		1	5	4	3		26
	F	8	3						1						1					6		2	5	3	3		24
TOTAL	M		9	3	1	5	6		7	2	4	5	2		5	3	4	5		26	5	10	15	28	11	1	325
	F		11	5		6	4	1	7	3	5		6		4	2	7	6	1	26	6	10	18	29	8		
TOTAL			20	9	1	11	10	1	14	5	9	5	8	2	9	5	11	11	1	52	11	20	33	57	19	1	325
Grand Total			30			22			43						25			64			64			57	19	1	325

Table 1: Number of responses made by all children in each of the 24 categories as per grade level and sex.

TABLE 2

Grade	Function	Auxiliary Part	Quality	Location	Other Events	Quantity	Supercrdinate	Subordinate	Synonym	Total
1	6	9	14	9	17	18	17	9	0	20
2	5	5	17	3	22	22	21	5	0	19
3	12	7	13	9	21	16	16	4	1	21
4	14	9	15	9	15	18	19	1	0	24
5	8	2	4	8	26	26	14	12	0	15

Table 2. Percent of utterances made by in each of nine categories as classified by grade level.

TABLE 3

Category	Function	Aux. Part	Quality	Location	Other Event	Quantity	Superordinate	Subordinate	Synonym
Total Percent	9	7	13	7	20	20	18	6	.3
			76%					24%	

Table 3. Percent of utterances of all grade levels in each of the nine categories.

TABLE 4

INFRALOGICAL

CATEGORY	FUNCTION			AUXILIARY PART			QUALITY						LOCATION			OTHER EVENT			QUANTITY		
SUBCATEGORY	SUPERORDINATE	SUBORDINATE	SPECIFIC	SUPERORDINATE	SUBORDINATE	SPECIFIC	BLACK	YELLOW	SIZE	TEXTURE	ADHESION	SHAPE	SUPERORDINATE	SUBORDINATE	SPECIFIC	PRECEDING	SUCCEEDING	CONTEMPORARY	SINGLE	PLURAL	NON SPECIFIC
PERCENT	67	30	3	50	45	3	33	12	21	12	18	4	36	20	44	17	2	81	17	31	51

Table 4. Percent of utterances of all grade levels in each subcategory in the Infralogical relation category.

TABLE 5

GRADE	SEX	ASSIGNED NAME AND ASKED FOR VERIFICATION	ASKED NAME OF OBJECT	REQUEST TO TAKE OBJECT	NO QUESTION
1	M	0	3	0	4
	F	0	4	0	4
2	M	2	0	1	5
	F	0	1	0	6
3	M	1	2	1	4
	F	0	2	0	5
4	M	0	3	0	4
	F	1	2	0	5
5	M	2	2	0	3
	F	2	3	0	3
Grand Total		9	22	2	43

Table 5. Number of children assigned to each of four categories during the puzzle presentation situation with respect to grade level and sex.